A Patch of Hair Loss on the Scalp

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Case Report

A 91-year-old woman presented to the dermatology outpatient clinic with a self-reported one-month history of asymptomatic hair loss on her left vertex scalp. Past medical history was significant for hypothyroidism, for which she was on treatment. She denied any recent stressors, illnesses, sick contacts, new medications, or trauma. Previous treatment with topical clotrimazole from an outside physician proved unhelpful. Physical examination revealed a geometric shaped patch of decreased hair density on the left vertex scalp with sparse perifollicular erythema and broken hairs, without loss of follicular ostia or scarring (Figure 1). No scale or lichenification was appreciated. A punch biopsy of the peripheral affected area was sent for histological analysis (Figures 2A–2C).

Diagnosis

Trichotillomania

Microscopic Findings and Clinical Course

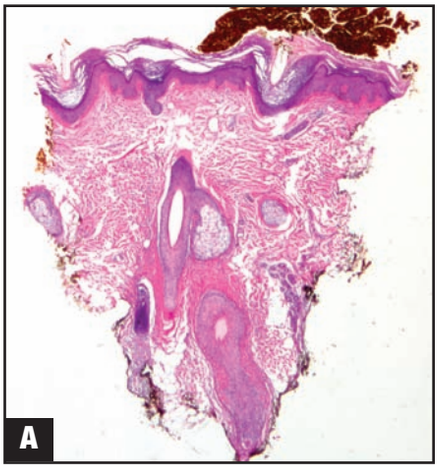
The biopsy of the scalp revealed increased catagen hairs and empty anagen follicles, without inflammation or fibrosis. Periodic acid-Schiff (PAS) staining was negative for organisms and Verhoeff's Van Gieson (EVG) stain was negative for elastic fibers. The histopathological findings were consistent with a diagnosis of trichotillomania. The patient was treated with topical fluocinonide solution twice daily for one month and was also requested to avoid any irritants or trauma to the scalp including hair dyes or styling in addition to scalp manipulation including hair pulling or use of combs. Hair regrowth became evident after one month of therapy.

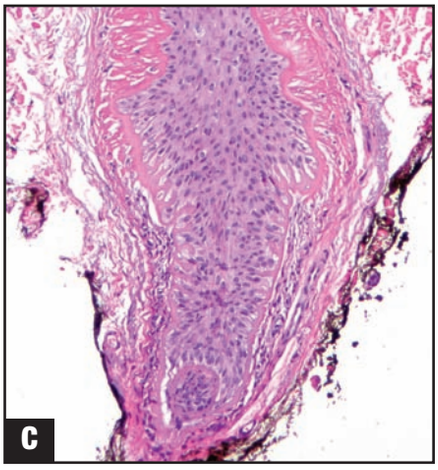
Discussion

Trichotillomania (Greek for "hair pulling madness") is an impulse-control disorder characterized by the abnormal urge to pull hair, which subsequently results in a slowly progressive non-scarring alopecia. According to the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*, episodes are often preceded by feelings of tension or anxiety, which are relieved by the act of hair pulling.[1] Trichotillomania affects approximately 1 to 3.5 percent of adolescents and young adults, with a median age of onset of 12 years and a female predilection of 3.5:1.[2–6] It is associated with psychiatric conditions including depression, obsessive-compulsive disorder (OCD), anxiety, and alcohol abuse.[7,8] Patients often confess to their hair manipulation and admit to its occurrence during sedentary activities, such as reading, studying, or watching television. In many instances, the patient will not recognize the hair pulling until after its occurrence; in contrasting situations, the act of hair pulling is a deliberate means to relieve stress or anxiety. Sleep-associated hair pulling is a reported condition and should be inquired about when there is a high index of suspicion.[9] Despite confounding genetic and psychiatric studies, trichotillomania remains an elusive disorder.[10,11]

Clinical lesions are most common on the vertex scalp, but can be seen in other regions of the scalp, face, and body. The classic presentation is that of an irregularly shaped or so-called "geometric" configured patch of decreased hair density in an area that the patient can easily reach (Figure 3). Similar to alopecia areata, the patch of hair loss has minimal perifollicular erythema and loss of follicular ostia (which is a sign of a scarring process); although both conditions contain broken hairs. In trichotillomania, the hairs are haphazardly arranged throughout the affected area and appear short, distorted, and of varying lengths (Figure 4).[12,13] Upon closer inspection, there may be comedo-like black dots and empty follicular ostia. Alopecia areata is characterized by "exclamation point hairs," which are distally tapered and seen adjacent to, or at the periphery of, the affected areas; these findings can be demonstrated under dermoscopic evaluation (Figure 5).[14–16] In addition, nail pitting and eyebrow or eyelash

Figure 1. Irregularly defined patch of decreased hair density on the left scalp





Figures 2A–2C. (A) Scanning view of scalp punch biopsy (4x, H&E). (B) Prominent catagen hair (right) with adjacent empty anagen follicle (left) (40x, H&E). (C) Prominent catagen hair at higher magnification (100x, H&E)

involvement support the diagnosis of alopecia areata. It is uncommon for patients with trichotillomania to grasp and remove eyelashes, as it causes significant pain and is more noticeable to others. Additional findings, such as pustules, excoriations, or lichenification may occur from repeated trauma. However, these observations may be suggestive of pruritus from an underlying inflammatory cause, such as tinea capitis, psoriasis, or a scarring type of alopecia rather than a purely psychological cause. Any scale should be scraped and examined with a potassium hydroxide (KOH) preparation or with microscopic evaluation with PAS staining.

Other hair conditions have a similar appearance to trichotillomania and may confuse practitioners without a high index of suspicion for a psychological cause of alopecia. Traction alopecia is correlated with excessive stress or pulling forces on the hair shafts from practices such as tight braiding or hair clips and results in scarring alopecia most often along the frontoparietal hairline. In contrast, central centrifugal cicatricial alopecia (CCCA), another scarring alopecia from hairstyling practices (most often from "hot combing" or chemical hair treatments) affect the central scalp, but can be widespread as the disease progresses (Figure 6). Lastly, monilethrix, an autosomal dominant disorder of mutated hair cortex keratins, can simulate trichotillomania clinically because it results in generalized short, fragile, broken hairs. However, there is "beading" along the hair shafts that will be seen on dermoscopic evaluation or hair pull with microscopic evaluation.

The most frequent microscopic findings in trichotillomania are empty anagen follicles, increased numbers of noninflamed catagen follicles, and pigment casts in hair shafts. Damaged hair follicles and hair shafts (trichomalacia) with perifollicular hemorrhage and hair debris in the dermis are also common. Other features include keratin plugging, perifollicular clefting, hair bulb distortion, and sebaceous glands with empty spaces. All of these features

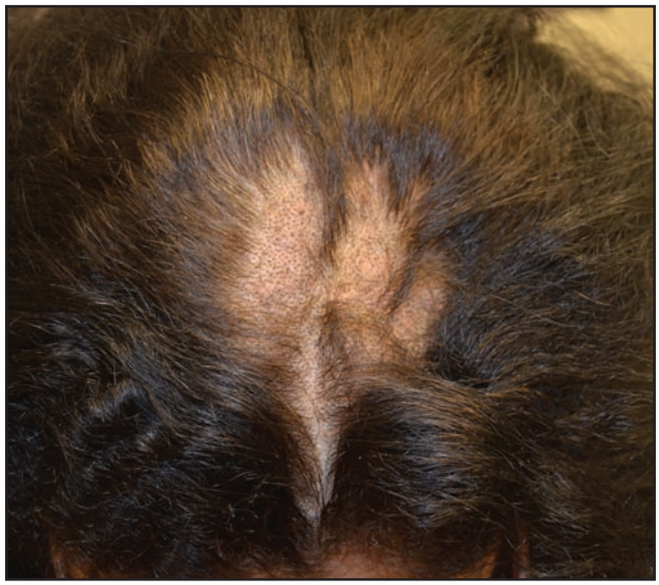


Figure 3. Trichotillomania, mild. Multiple black dots as well as broken and irregular length hairs in a patch of nonscarring alopecia of the scalp

Figure 4. Trichotillomania, severe. Generalized decreased hair density of scalp with multiple excoriations and varying hair lengths. Notice the sparing of hair pulling on the most lower portion of the scalp hairline.

Figure 5. Alopecia areata, dermoscopic view. Tapered and fine white hairs as well as yellow dots seen on the periphery of a scalp lesion

Figure 6. Central centrifugal cicatricial alopecia. Central scalp with scarring alopecia reflected as patches of decreased hair density with loss of follicular ostia. This patient reported tenderness and pruritus for many years prior to hair loss progression.

may not be seen within a single cut of the biological specimen and examination of multiple levels may be helpful in establishing the diagnosis. While traction alopecia also demonstrates increased catagen follicles, it results in scarring that is not present in trichotillomania and can be highlighted with EVG staining.[6,13,17]

Treatment for trichotillomania focuses on both psychological and medical treatments. Psychotherapeutic interventions include supportive psychotherapy, cognitive-behavioral therapy, and habit-reversal therapy.[18,19] Administration of selective serotonin reuptake inhibitors (SSRIs) remains the first-line pharmacological therapy; however, various other medications have been reported to be helpful including clomipramine, naltrexone, risperidone, lithium, olanzapine, topiramate, oxcarbazepine, and aripiprazole.[1,2,4,12,20–23] A 12-week, double-blind, placebo-controlled trial showed improvement with N-acetylcysteine (1200–2400mg/day)—a glutamate modulator thought to have a role in neurotransmission and inflammation—in 50 adults with a range of compulsive behaviors.[24] Similar results were seen with dronabinol—a cannabinoid agonist that also has effects on glutamate—in 14 female patients with no deleterious effects on cognition.[25] Nine (64.3%) patients were "responders," demonstrating ≥35-percent reduction in symptoms of trichotillomania, which correlated with "much or very much improved" on the Clinical Global Impression scale.

For patients with associated pruritus that may be stimulating their compulsions, topical anti-inflammatory agents, such as super-potent corticosteroids (clobetasol), topical calcineurin inhibitors (pimecrolimus, tacrolimus), topical nonsteroidal anti-inflammatory drugs (diclofenac), topical anesthetics (lidocaine, menthol), and/or topical or oral antihistamines (diphenhydramine, hydroxyzine, doxepin, pramoxine) may prove beneficial. A recent report documented success with botulinum toxin in the treatment of neurotic excoriations of the scalp.[26] Botulinum toxins have shown success in treating pruritus of other conditions, such as brachioradial pruritus and neuropathic itch.[27,28] Nonetheless, additional controlled trials are necessary to provide evidence for the most effective therapeutic approaches for this aggravating condition.

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